Oracle® Health Sciences Information Manager

Record Locator Service Installation and Configuration Guide

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Oracle Health Sciences Information Manager Record Locator Service Installation and Configuration Guide, Release 1.2

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Contents

Preface

Oracle Health Sciences Information Manager (OHIM) leverages the CONNECT open source, reference architecture and Oracle server virtualization to provide a broad range of international-standards-based web services to HIE applications in a management and performanceoptimized solution, an ideal complement to the Oracle Exadata hardware appliance and pre-installed Oracle VM.

Audience

This document is intended for users who plan to install and configure the HIA Health Locator VM template. It also provides instructions for installing patches.

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Related Documents

For more information, see the following documents in the Oracle Health Sciences Information Manager Release 1.1 documentation set:

- *Oracle Health Sciences Information Manager Release Notes* (Part Number E22763-01)
- *Oracle Health Sciences Information Manager Policy Monitor Installation and Configuration Guide* (Part Number E22760-01)
- *Oracle Health Sciences Information Manager Policy Engine Installation and Configuration Guide* (Part Number E22759-01)
- *Oracle Health Sciences Information Manager OHMPI Installation and Configuration Guide* (Part Number E22762-01)

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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Installing and Configuring OHIM Health Record Locator

This chapter provides the instructions to install and configure the Health Record Locator VM template. Also, it provides the instructions on how to configure CONNECT software on OHIG Adapter/Gateway VMs to make use of HIEOS registry-based Health Record Locator.

This chapter includes the following sections:

1.1 Understanding OHIM Health Record Locator Components and Templates

The OHIM Policy Monitor template uses the "Paravirtualized" virtualization method. The template is distributed as a compressed tar file (`*.tgz`). The compressed tar file contains two binary files and a text file. The binary files are the disk images taken from a fully configured and functional VM. The text file is a VM configuration file.

1.1.1 OHIM Health Record Locator Components

The contents of the compressed tar file is listed below:

- Disk Image with Oracle Software

  `/appliance.img`

- Disk Image with Operating System

  `/System.img`

- VM Configuration File

`/vm.cfg`

1.1.2 Health Record Locator VM Template

The VM consists of the following pre-installed software:

- Oracle Enterprise Linux 5 (as in `System.img`)

  http://www.oracle.com/technetwork/topics/linux/whatsnew/index.html

- OHIM specific software (as in `appliance.img`)
  - Apache Ant 1.8.1

    Install directory: `/home/common/ant`
  - Java Development Kit 1.6.0_X

    Install directory: `/home/common/java/latest` *(symbolic link to JDK 1.6.0_X)*
  - For hiauser *only*:
    * OHIM Ant Configuration Utility

      Install directory: `/home/hiauser/config`
    * Netbeans 6.7.1

      Install directory: `/home/hiauser/netbeans-6.7.1`
    * Glassfish Enterprise Server 2.1.1

      Install directory: `/home/hiauser/SUNWappserver`

      Admin user

      - Username: `admin`

      - Password: `adminadmin`

      Admin Console

      - `http://<VM_IP or VM_HOST_NAME >:4848`
- VM Memory Settings:
  - 2 GB (2048 MB) of RAM

    Note: The RAM memory setting can be changed after installation in VM Manager.
  - 16 GB of Disk Space
- Linux Users:
  - Root user
    * Username: `root`
    * Linux Group: `root`
    * Password: `ovsroot`
  - OHIM specific user
    * Username: `hiauser`

* Linux Group: `hiauser`
* Password: `hiapass`

Tip: For security purposes, it is recommended that you change the default passwords after installation.

1.2 Importing the OHIM Health Record Locator Template

To import the OHIM Health Record Locator VM template:

1. Copy the OHIM Health Record Locator VM template `.tgz` file to the `/OVS/seed_pool` directory of your Oracle VM Server machine.
2. Uncompress the `.tgz` file:

   ```
   > tar -zxvf <FILENAME>.tgz
   ```

   This step creates a directory with the name of the template.

   Example:

   ```
   > cd /OVS/seed_pool
   > tar -zxvf /OVS/seed_pool/OVM_HIMV12_X86_HEALTHRECORDLOCATOR_PVM.tgz
   ```

   Creates the directory:

   `/OVS/seed_pool/OVM_HIMV12_X86_HEALTHRECORDLOCATOR_PVM`

   Note: If you are using 64 bits, you would use `OVM_HIMV12_X86_64_HEALTHRECORDLOCATOR__PVM`.

3. Log in to the Oracle VM Manager

   Note: The default location for the Oracle VM Manager log in screen is `http://<VM_MANAGER_HOST_NAME>:8888/OVS`.

4. From the Oracle VM Manager console:
   a. Click the **Resources** tab. The Virtual Machine Templates screen is displayed.
   b. Click the **Import** button. The Source screen is displayed.
   c. Choose the **Select from Server Pool (Discover and register)** radio button.
   d. Click **Next**. The General Information screen is displayed.

      Enter or select the following general information:

      - The server pool on which the virtual machine will be located.

      Server Pool Name: *<SERVER_POOL_NAME>*

      - The operating system of the Virtual Machine Operating System:

      `Oracle Enterprise Linux 5`

      - The Oracle VM template to be imported.

      Virtual Machine Template Name: *<VM_TEMPLATE_NAME>*

      - The username used to log in to the Virtual Machine.

Virtual Machine System Username: `root`

- The password used to log in to the Virtual Machine.

Virtual Machine System Password: `ovsroot`

e. Click **Next**. The Confirm Information screen is displayed.

f. Click **Confirm**. The Virtual Machine Template screen is displayed with a message to confirm the VM template has been imported.

5. Click the **Resources** tab to see the list of available VM templates.

6. To make the Virtual Machine template available for use, select the Virtual Machine template and click **Approve**, moving the VM template from the "Pending" state to the "Active" state.

   The VM template is imported and ready for use in Oracle VM Manager.

1.3 Creating the OHIM Health Record Locator VM

To create the OHIM Health Record Locator VM from the VM template:

1. Create a new VM using the Health Record Locator VM template just installed by following the instructions in the *VM Manager 2.2 User's Guide* (refer to Section 6.3.1, "Creating Virtual Machine from a Template").

2. To power on the Virtual Machine select the **Virtual Machines** tab, select the **Virtual Machine Name**, and click **Power On**.

3. In the VM Manager Console ensure that the Health Record Locator VM is now in the running state (Status=Running).

1.4 Configuring the OHIM Health Record Locator VM

This section provides instructions for configuring the OHIM Health Record Locator VM.

- "How to VNC into a VM"
- "Configuring the VM Network Settings"
- "Configuring the OHIM Health Record Application's Oracle Database"
- "Installing and Configuring OHIM Health Record Application"

1.4.1 How to VNC into a VM

To VNC into a VM:

Note: To enable the VNC Port link in the VM Manager follow the instructions in "Installing OVM Console" at `http://oss.oracle.com/oraclevm/manager/RPMS/README-console`.

Expand the details of the VM by clicking the **+** on **Show**. You can VNC into the box from the VM Manager by clicking on the VNC Port link under the VM details, or you can use a VNC client to log in using the address:

<VM_SERVER_HOST_NAME>:<VM_VNC_PORT>

1.4.2 Configuring the VM Network Settings

To configure the VM to use static IP:

> **Note:** The VM is configured by default to use DHCP to assign an IP address.

If you are using DHCP addressing you can skip the following steps.

1. To configure the VM to use static IP, log in as the root user (default password: `ovsroot`) and set the IP using the following steps:
   a. Select **System**, **Administration**, and then **Network**.
   b. Choose **Devices**, click **Edit**, select the **Statically Set IP Address** radio button, and then enter the following values:

      - Address: *<VM_IP>*

      - Subnet mask: *<SUBNET_MASK>*

      - Default Gateway address: *<DEFAULT_GATEWAY_ADDRESS>*

      - From the Ethernet Device panel, select the **Hardware Device** tab, and then click the **Probe** button that corresponds to "Bind to MAC address".

      This sets the correct MAC address for this machine.

      > **Note:** Make certain that you a record the MAC address.

   c. Click **OK**.
   d. Choose **File** and then click **Save**.
   e. Click the **DNS** tab and then enter the following values:

      - Hostname: *<VM_HOST_NAME>*

      - Primary DNS: *<PRIMARY_DNS>*

      - Secondary DNS: *<SECONDARY_DNS>*

      - Tertiary DNS: *<TERTIARY_DNS>*

      - DNS search path: *<VM_NAME_SUFFIX>*
   f. Choose **Next** and click **Save**.
   g. Choose the **Hosts** tab, click **New**, and then enter the following values:

      - Address: *<VM_IP>*

      - Hostname: *<VM_HOST_NAME>*

      - Aliases: *<VM_NAME_PREFIX>* hostname
   h. Click **Okay**.
   i. Choose **File** and then click **Save**.
   j. Restart Network Services from a terminal window.

      ```
      > service network restart
      ```
   k. Check the output for *<VM_IP>*.

```
> ifconfig
```

l. Check the output for <*VM_HOST_NAME*>.

```
> hostname
```

m. Check the success of:

```
> ping <VM_IP>
```

n. Check the success of:

```
> ping <VM_HOST_NAME>
```

Note: (Optional) In order to preserve the static IP address when the OVM is powered off, follow below steps, but only if the line

```
vif = ['mac=AA:BB:CC:DD:AA:CC,bridge=xenbr0']
```

does not match what you have in the `vm.cfg` file (see below).

1. Power off the Virtual Machine by selecting the **Virtual Machines** tab in the VM Manager, choose the **Virtual Machine Name**, and click **Power Off**.
2. Edit the `vm.cfg` file that is found on the VM Server under `/OVS/seed_pool/`<*template_name*> by replacing the line:

   ```
   vif = ['bridge=xenbr0,type=netfront']
   ```

   with the MAC corresponding to that virtual machine:

   ```
   vif = ['mac=AA:BB:CC:DD:AA:CC,bridge=xenbr0']
   ```

   where `AA:BB:CC:DD:AA:CC` is the MAC corresponding to the created OVM noted above.

1.4.3 Configuring the OHIM Health Record Application's Oracle Database

To configure your Oracle Database to be used with Health Record Locator:

1. Log in to the VM as `hiauser` (default password: `hiapass`).
2. Copy the file from `~hiauser/config/oracle_db/rls_oracle_db_scripts.zip` to the host where you have a SQL Plus client present in the PATH and Bash or Sh shell is available. Unzip the contents.
3. Login to the host having SQL Plus, and change the directory to where you copied/extracted the files in the previous step.
4. Update the SQL script `create_tblspc_users.sql` with your Oracle DB specific Tablespace information and new passwords for the users **ADT**, **OMAR**, and **LOG** that will be created.
5. Update the script `create_tblspc_users.sh` for the below variables.

   `oracleDBScriptsDir`: The current directory.

   `DB_ADMIN_ID`: The root or Id in your Oracle DB having access to create table spaces and users.

   `DB_ADMIN_PASS`: The password for above Id.

   `DB_HOST`: The database host.

   `DB_PORT`: The database port.

DB_SID: The database SID.

ADT_USER_PASS: The **ADT** user password as selected in previous step.

OMAR_USER_PASS: The **OMAR** user password as selected in previous step.

LOG_USER_PASS: The **LOG** user password as selected in previous step.

6. Make sure that SQL Plus is available in the PATH, then run the script `create_tblspc_users.sh` as follows:

   ```
   >bash create_tblspc_users.sh
   ```

7. (Optional) Follow this step only if you want to load test data and verify the configuration:

   Make sure that SQL Plus is available in the PATH, then run the script `loadTestData.sh` as follows.

   DB_HOST: Database host

   DB_PORT: Database port

   DB_SID: Database SID

   ADT_USER_PASS: ADT user password

   OMAR_USER_PASS: OMAR user password

   To make sure that `sqlplus` is available in the path, run the script `loadTestData.sh` as follows:

   ```
   >bash loadTestData.sh
   ```

1.4.4 Installing and Configuring OHIM Health Record Application

Note: You need to setup your Oracle Database as described in the previous section before proceeding with this section.

To install and configure the OHIM Health Record application:

1. Log in to the OHIM Health Record Locator VM as `hiauser` (default password: `hiapass`).

   Note: When `hiauser` is used to login, proper environment variables and aliases are set.

2. Navigate to and run the script `~hiauser/config/scripts/update_gf_resources.sh`. Follow the prompts to enter the Oracle DB host, port, SID, and passwords for **ADT**, **OMAR**, and **LOG** users. The script will update `domain.xml`.

   ```
   >bash update_gf_resources.sh
   ```

3. Update the config file `$AS_HOME/domains/domain1/applications/j2ee-modules/xref/config/xconfig.xml` to point for the ATNA server location as needed.

> **Note:** The Audit Record Repository (ARR) Server must be set up before you perform this step. If you need to set up the ARR Server, see the *Oracle Health Sciences Information Manager Policy Monitor Installation and Configuration Guide* (Part Number E22760-01).

Make sure to restart the GlassFish Server if the configuration file is updated by issuing "stop" and "start" commands.

> **Note:** The "stop" and "start" commands are UNIX alias commands.

Example:

```
Enable ATNA Server audit logging.
    ...
        <Property name="ATNAPerformAudit">true</Property>
        <Property name="ATNAsyslogProtocol">udp</Property>
        <Property name="ATNAsyslogHost">atna_audit_server_host</Property>
        <Property name="ATNAsyslogPort">514</Property>
    ...
```

4. This step produces a self-signed certificate for use during the initial installation and testing. Use appropriate signed certificates for production use.

   > **Note:** Before proceeding to the next step, configure a hostname for the Virtual Machine.
   >
   > Navigate to and run the scripts `~hiauser/config/scripts/create-and-import-selfsigned-certs.sh`.
   >
   > `>bash create-and-import-selfsigned-certs.sh`

   The scripts specifically do the following things:

   - Creates the keystore for the private internal key
   - Exports the certificate that will authenticate the internal key
   - Imports the trusted certificates into the truststore
   - Provides these certificates to `appserver` to use for authentication purposes

5. Install Adapter VM's certificate by copying the certificate of Adapter VM *<ADAPTER_VM_HOSTNAME.cer>* to the `/home/hiauser/SUNWappserver/domains/domain1/config` folder. Navigate to and run the scripts `~hiauser/config/scripts/import-others-cert.sh`. When prompted by the scripts, enter the Adapter VM's hostname (it should match with the `cert` file you copied to the `config` folder without the ".cer" suffix).

   `>bash import-others-cert.sh`

6. Start the application server using the "start" command.

7. The XDS.b Registry services are available at the following URLs:

   `http://<health_record_locator_host_url>:8080/axis2/services/xdsregistryb ( synchronous, non TLS)`

https://<health_record_locator_host_url>:8181/axis2/services/xdsregistryb (synchronous, TLS)

http://<health_record_locator_host_url>:8080/axis2/services/xdsregistrybas (asynchronous, non TLS)

https://<health_record_locator_host_url>:8181/axis2/services/xdsregistrybas (asynchronous, TLS)

1.5 Configuring Document Repository

Refer to your Document Repository documentation to configure it to point to Health Record Location services.

Use the following Health Record Location services URLs to configure the Document Repository:

http://<health_record_locator_host_url>:8080/axis2/services/xdsregistryb (synchronous, non TLS)

https://<health_record_locator_host_url>:8181/axis2/services/xdsregistryb (synchronous, TLS)

http://<health_record_locator_host_url>:8080/axis2/services/xdsregistrybas (asynchronous, non TLS)

https://<health_record_locator_host_url>:8181/axis2/services/xdsregistrybas (asynchronous, TLS)

1.6 Installing Self-signed Certificates on OHIG Adapter VM (if not done already)

1. Log in to the Adapter VM as `hiauser` (password: `hiapass`)
2. Stop the application server using the following commands:
   a. `> cd /home/hiauser/SUNWappserver/bin`
   b. `> asadmin stop-domain domain1`
3. Navigate to the directory `/home/hiauser/config/scripts` using the following command:

   ```
   > cd /home/hiauser/config/scripts
   ```
4. Run the script `create-and-import-selfsigned-certs.sh` to install the self-signed certificate. It does the following things:
   - Creates the keystore for the private internal key
   - Exports the certificate that will authenticate the internal key
   - Imports the trusted certificates into the truststore
   - Provides these certificates to `appserver` to use for authentication purposes

   ```
   > sh create-and-import-selfsigned-certs.sh
   ```
5. Install the certificates from the other components that will communicate with the Adapter (Gateway, OHMPI, Record Locator, Policy Engine, and so on). Copy the certificate of the component VM *<VM_HOSTNAME.cer>* to the `/home/hiauser/SUNWappserver/domains/domain1/config` folder. Navigate to and run the scripts

/home/hiauser/config/scripts/import-others-cert.sh. When prompted by the scripts, enter the VM hostname (it should match with the cert file you copied to the config folder without ".cer" suffix).

```
>bash import-others-cert.sh
```

1.7 Installing Self-signed Certificates on OHIG Gateway VM (if not done already)

1. Log in to the Gateway VM as hiauser (password: hiapass)
2. Stop the application server using the following commands:
   a. `> cd /home/hiauser/SUNWappserver/bin`
   b. `> asadmin stop-domain domain1`
3. Navigate to the directory /home/hiauser/config/scripts using the following command:

   ```
   > cd /home/hiauser/config/scripts
   ```
4. Run the script create-and-import-selfsigned-certs.sh to install the self-signed certificate. It does the following things:
   - Creates the keystore for the private internal key
   - Exports the certificate that will authenticate the internal key
   - Imports the trusted certificates into the truststore
   - Provides these certificates to appserver to use for authentication purposes

   ```
   > sh create-and-import-selfsigned-certs.sh
   ```
5. Install the Adapter VM certificate. Copy the certificate of Adapter VM *<ADAPTER_VM_HOSTNAME.cer>* to the /home/hiauser/SUNWappserver/domains/domain1/config folder. Navigate to and run the scripts /home/hiauser/config/scripts/import-others-cert.sh. When prompted by the scripts, enter the Adapter VM hostname (it should match with the cert file you copied to the config folder without ".cer" suffix).

   ```
   >bash import-others-cert.sh
   ```

1.8 Configuring CONNECT Software on OHIG Adapter VM for Health Record Locator

1. Login to OHIG Adapter VM using hiauser (password: hiapass).
2. Update the NHIN confile file at ~hiauser/SUNWappserver/domains/domain1/config/nhin/internalConnectionInfo.xml as below for services "adapterxdsbdocregistry" and "adapterxdsbdocregistrysoap12".

   You can refer to and re-use the sample one in OHIM Health Record Locator VM at ~hiauser/config/nhinAdapter/internalConnectionInfo.xml

```
    <service>
             <name>adapterxdsbdocregistry</name>
             <description>Adapter Document Query</description>

<endpointURL>http://localhost:8080/CONNECTAdapterDocRegSoap12/AdapterDocRegistr
```

```
y2Soap12Service</endpointURL>
       </service>
```

a. Add the *<service>* element if it is not present or modify it if present for service "adapterxdsbdocregistrysoap12".

b. Make sure *<endpointURL>* is pointing to Registry service URL.

```
     <service>
              <name>adapterxdsbdocregistrysoap12</name>
              <description>Adapter Document Registry Soap12</description>
              <endpointURL>http://$REG_
HOST:8080/axis2/services/xdsregistryb</endpointURL>
      </service>
```

The below two service configurations are shown here as reference to connect to the Repository. Consult your Document Repository configuration document for details.

Note: The below reference updates the endpoint for services "adapterxdsbdocrepository" and "adapterxdsbdocrepositorysoap12".

---

c. Change the *<endpointURL>* for the service "adapterxdsbdocrepository" as below.

```
     <service>
              <name>adapterxdsbdocrepository</name>
              <description>Adapter Document Retrieve</description>

<endpointURL>http://localhost:8080/CONNECTAdapterDocReposSoap12/AdapterDocR
epository2Soap12Service</endpointURL>
```

d. Change *<endpointURL>* for service "adapterxdsbdocrepositorysoap12" to point to Repository service URL.

```
     <service>
              <name>adapterxdsbdocrepositorysoap12</name>
              <description>Adapter Document Retrieve
Soap12</description>
             <endpointURL>http://$REP_
HOST:8080/axis2/services/xdsrepositoryb</endpointURL>
      </service>
```

3. Add the below property to `$AS_HOME/domains/domain1/config/nhin/repository.properties`:

   ```
   convertPnR2SOR=true
   ```

4. Stop the application server using the following commands:

   a. `> cd /home/hiauser/SUNWappserver/bin`

   b. `> asadmin stop-domain domain1`

5. Start the application server using the following commands:

   a. `> cd /home/hiauser/SUNWappserver/bin`

   b. `> asadmin start-domain domain1`

1.9 Avoiding a Java Security Certificate Exception

To avoid a `java.security.cert.CertificateException` you need to ensure that your OHIG/OHIM hostnames are not fully qualified.

To Make the Hostname Not Fully Qualified

1. Set the OHIM and OHIG hostnames to be not fully qualified.
2. Add aliases for all hosts.
3. Regenerate and re-import the certificates.
4. Restart all the servers.
5. Test that you do not have a Java security certificate exception.

A

References

This section provides links to supporting documentation and resources.

A.1 Oracle Virtual Machine

Oracle Virtual Machine (VM) Documentation Index

http://download.oracle.com/docs/cd/E15458_01/index.htm

Oracle VM Manager Release Notes

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15440/toc.htm

Oracle® VM Manager Installation Guide

Release 2.2, Part Number E15439-01

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15439/toc.htm

Oracle VM Manager User Guide

Release 2.2, Part Number E15441-02

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15441/toc.htm

Oracle VM Server Release Notes

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15443/toc.htm

Oracle® VM Server Installation Guide

Release 2.2, Part Number E15442-01

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15442/toc.htm

Oracle VM Server User Guide

Release 2.2, Part Number E15444-03

http://download.oracle.com/docs/cd/E15458_01/doc.22/e15444/toc.htm

Installation of Oracle 11g Database Release 1

Oracle 11g is also available as a VM template

http://www.oracle.com/pls/db111/homepage

Oracle 11g VM Template

http://www.oracle.com/technetwork/server-storage/vm/database-092479.html

B

Acronyms

This section provides a list of commonly used acronyms.

B.1 Acronyms

ARR
Audit Record Repository

CCD
Continuity of Care Document

CDA
Clinical Document Architecture

DER
Distinguished Encoding Rules

HIE
Health Information Exchange

HIO
Health Information Organization

HL7
Health Level 7

IHE
Integrating the Healthcare Enterprise

NAV
Notification Of Document Availability

NHIE
Nationwide Health Information Exchange

NHIN
Nationwide Health Information Network

NHIO
Nationwide Health Information Organization

OHIG
Oracle Health Sciences Information Gateway

OHIM
Oracle Health Sciences Information Manager

SAML
Security Assertion Markup Language

VM
Oracle Virtual Machine

WSDL
Web-Service Definition Language

XDM
Cross-Enterprise Document Media Interchange

Glossary

This section provides definitions of commonly used words.

CONNECT

Is a software solution that supports health information exchange that implements Nationwide Health Information Network (NHIN) standards and governance to make sure that health information exchanges are compatible with other exchanges being set up throughout the country. It enables public and private organizations to participate in the NHIN by leveraging their existing health information systems.

CONNECT Adapter

The portion of the CONNECT architecture that encapsulates the components most likely to be customized or replaced by an organization implementing CONNECT.

CONNECT Gateway

The portion of the CONNECT architecture that encapsulates the components most likely to be use as-is by an organization without modification. These components are primarily responsible for orchestrating information exchange with the NHIN.

Health Information Exchange

Health Information Exchange is an entity that enables the movement of health-related data among entities within a state, a region, or a non-jurisdictional participant group, which might include "classic" regional health information organizations at regional and state levels, Health Information Organization integrated delivery systems and health plans, or health data banks that support health information exchange.

Health Information Organization

Health Information Organization is an organization that enables the movement of health-related data among entities, evolving as a replacement term for health information exchange or HIE. Healthcare Information Technology Standards Panel Or simply HITSP, a cooperative partnership between the public and private sectors formed and supported by ONC for the purpose of harmonizing and integrating standards that will meet clinical and business needs established by AHIC use cases for sharing information among organizations and systems.

Integrating the Healthcare Enterprise

Integrating the Healthcare Enterprise is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information, promoting and coordinating the use of established standards such as DICOM and HL7 to address specific clinical need in support of optimal patient care. The Nationwide Health Information Network is being developed by ONC to provide a secure,

nationwide, interoperable health information infrastructure that will connect providers, consumers, and others involved in supporting health and healthcare.

Nationwide Health Information Network

Nationwide Health Information Network is a set of standards, services and policies that enable secure health information exchange over the Internet. The network will provide a foundation for the exchange of health information across diverse entities, within communities and across the country, helping to achieve the goals of the HITECH Act. This critical part of the national health IT agenda will enable health information to follow the consumer, be available for clinical decision making, and support appropriate use of healthcare information beyond direct patient care so as to improve population health.

Nationwide Health Information Network Gateway

Within the CONNECT solution, the implementation of the core NHIN services and service interface specifications, comprising the CONNECT gateway and CONNECT adapter. The NHIN health information exchange or NHIE, a health information exchange that implements the NHIN architecture, processes, and procedures, is accredited as a participant of the NHIN.

Oracle Virtual Machine

Oracle Virtual Machine is a platform that provides a fully equipped environment for better leveraging the benefits of virtualization technology. Oracle VM enables you to deploy operating systems and application software within a supported virtualization environment.

Oracle Virtual Machine Manager

Oracle Virtual Machine Manager provides the user interface, which is a standard ADF (Application Development Framework) web application, to manage Oracle VM Servers. It manages virtual machine lifecycle, including creating virtual machines from installation media or from a virtual machine template, deleting, powering off, uploading, deployment and live migration of virtual machines. It manages resources, including ISO files, virtual machine templates, and sharable hard disks.

Oracle Virtual Machine Server

Oracle Virtual Machine Server allows a self-contained virtualization environment designed to provide a lightweight, secure, server-based platform for running virtual machines. Oracle VM Server is based upon an updated version of the underlying Xen hypervisor technology, and includes Oracle VM Agent.

Oracle Virtual Machine Template

Oracle Virtual Machine Template provides an innovative approach to deploying a fully configured software stack by offering pre-installed and pre-configured software images. Use of Oracle VM templates eliminates the installation and configuration costs, and reduces the ongoing maintenance costs helping organizations achieve faster time to market and lower cost of operations.

Security Assertion Markup Language

Security Assertion Markup Language is an XML-based standard for exchanging authentication and authorization data between security domains.

Web Services Description Language

Web Services Description Language is an XML format for describing network services as a set of endpoints operating on messages containing either document-oriented or procedure-oriented information.

XML Schema

XML Schema is a means for defining the structure, content, and semantics of XML documents.